



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Wages, Hours and Individual Output

By N. I. STONE

Labor Manager, Hickey-Freeman Company, Rochester, N. Y.

THE ECONOMIC LAW OF WAGES

THE question of compensation is inseparable from the general wage problem. Limitations of space preclude a discussion of the theory of wages and those interested in the problem are referred to standard theoretical works on the subject. Nor would the theory of wages as developed by economists be of much practical aid for the purposes for which this volume is published.

The Marxian theory, which is held by the Socialists and is the ultimate logical elaboration of the classical theories of Smith and Ricardo, holds that wages are determined by the cost of maintaining a worker and his family at the standard of living prevailing in society at a given time. As the standard of life is, however, a very elastic quantity varying greatly among different groups of workers living in the same country and in the same period, the Marxian theory, whatever its theoretical merits, is of little practical value for our purposes.

At the other extreme of economic thought is the "marginal utility" theory which is today the accepted theory in our schools and universities. According to this theory, the rate of wages is determined by the "marginal" or ultimate utility or productivity of labor, that is to say, by the specific contribution which the last available laborer makes to the necessary product of society.

The two theories really supplement one another, and mark the limits within which wages fluctuate in actual practice under the varying and interacting influences of supply and demand. Under the most unfavorable combination of these two factors wages cannot permanently remain below the prevailing cost of living of a workman's family without disaster to the workers as well as to the entire economic structure of society. On the other hand, wages cannot permanently rise above the value of the product contributed by labor, since no industrial enterprise, be it large or small, could survive in the struggle of competition, if it con-

tinued for any length of time to pay out more in wages than its labor force has contributed to the value of its products.

Between these two extremes there is an endless gradation of rates of compensation determined by a variety of circumstances, among which the supply of and demand for labor, the prevailing cost of living, the productivity of labor and, last but not least, the strength of labor organizations exercised in collective bargaining, play the chief part.

The process of "bargaining," in a broad sense is the most conspicuous factor in wage determination. The bargaining may take the outspoken form of a bargain driven between a single employer or an association of employers on the one hand and an individual workman or a workmen's union on the other; or it may be disguised under the form of a workman hunting a job and accepting what he is offered when the supply of labor exceeds the demand or, vice versa, of employers scouring the market for labor and paying what the workman demands when the demand for labor outruns the supply, as was recently the case at the height of war activities. In either case the bargaining process goes on, with labor handled as any other commodity, the buyer (the employer) trying to get his commodity as cheaply as he can, and the seller (the workman) striving to obtain the highest possible price.

Were the analogy between labor and any other commodity complete, there would be nothing further to be said on the subject. The similarity between labor and other commodities, however, ends at this point. For, while the seller of an ordinary commodity parts with it as soon as he has delivered it to the buyer, the seller of the commodity known as "labor" is inseparable from it. It is from this circumstance that all the perplexities of the modern labor problem spring. And it is to the failure on the part of employers to take this fact into account that most of the "labor troubles" can be traced.

WAGES AND LABOR COST

Even in buying ordinary commodities we have learned that the lowest priced article is not necessarily the cheapest. An experienced buyer will consider not only the price he is asked to pay, but also the quality of the article he is getting in the bargain. Unless the article is a staple commodity absolutely standardized

under market requirements, such as wheat or pig iron, the lowest price will not necessarily mark the most economical purchase. A suit of clothes made of shoddy, though looking exactly the same as one made of virgin wool, will not last as long and, though selling at a much lower price, will prove the more expensive of the two, when the price paid for each suit is divided by the number of months of wear each gave.

This elementary truth is recognized by every experienced employer and foreman in comparing the usefulness of different employes; the worker who possesses superior skill or, who with the same skill works with greater speed, is always preferred and is readily offered a higher wage than the prevailing rate for workers of average speed or skill. But that the same labor force can be made cheaper by raising its wages or shortening its hours of labor, or both, is still an unknown fact among the great body of employers, superintendents and foremen, and, when stated, is regarded with distrust and with doubt in the practical wisdom of the man who advances this view. Yet, it has now been accepted as an elementary principle of the science of management among industrial engineers.

Stated baldly, the proposition that high-priced labor is cheaper than low-priced labor, and that shorter hours are more productive than long ones sounds like a paradox. If that be true, then the age-long struggle between capital and labor for higher wages and shorter hours has been the most tragic misunderstanding in history in which the employers have wasted millions of dollars and countless lives fighting against their own interests; while labor, trying to improve its own lot, has unwittingly fought for capital's best interests, trying to save it from its own folly.

As an industrial expert has well put it in a leading magazine devoted to industrial management, "it is the inefficient manufacturer who bewails most the size of his payroll. The efficient employer should pray for wages so high that his less efficient competitor will go out of business."¹

The misunderstanding is easily explained. All things remaining equal, the higher the rate of wages, the greater the labor cost of the manufactured product. This is perfectly logical, but rests on the false premise that all things remain the same when a

¹ W. R. Bassett—*Have We Reached the Limit of Wages?* *Factory*—February 1919, p. 255.

change in wages occurs. As a matter of fact, they seldom, if ever, remain unchanged. The mere increase in wages will not of itself produce the miracle, unless labor is so underpaid as to cause the workers to be poorly nourished, inadequately clothed, and housed under unsanitary conditions. In that case a substantial increase in wages which would enable them to eat nourishing food, wear clothing that will protect them against inclement weather and live in warm, light rooms in healthy surroundings will of itself improve the condition of the individual worker as a producing machine so as to increase greatly his productivity. It is but a common sense application of the rule which prompts a sensible man to feed his horse oats, instead of keeping it on an exclusive diet of hay and to provide well sheltered, clean and sanitary barns for his cattle, instead of neglecting it as a stingy, short-sighted farmer is apt to do. It was because of facts like these, that the Ford plan of providing a minimum rate of \$5.00 a day, practically doubling the earnings of the bulk of his employes, proved such a huge success, and instead of increasing his cost of production, produced the opposite effect.

With the war over and international trade about to resume its interrupted course, the cry for protection of American labor against the pauper labor of the old world again resounds through the country and the majority party in Congress bases its program for an immediate revision of the tariff almost solely on that ground. It is therefore felt that the universality of the law that high wages and short hours spell lower costs rather than the opposite, requires further demonstration.

The writer's attention was drawn to this aspect of the problem with particular force, while it was his good fortune to come into intimate contact with some of our industries when in charge of investigating into the cost of production for the United States Tariff Board. Some of the most important facts ascertained in those investigations will therefore be reproduced from an earlier statement by the writer:²

The first fact established by the Tariff Board was that there is no such thing as a cost of production in a given industry not only in one country, but even in the same city.

As confirmed by the later investigations of the New York State Factory

²N. I. Stone. *Is the Minimum Wage a Menace to Industry?* Survey—February 6, 1915.

Investigating Commission, and the Massachusetts Commission in other industries, and of the Wage Scale Board of the Dress and Waist Industry in New York City, the tariff board found that establishments existing side by side and competing in the same market are paying wages differing as much as 50 per cent for substantially the same grade of labor. It also found that neither the labor cost nor the total cost of production varies in a direct ratio with wages.

Thus in paper and pulp manufacture it was found that the labor cost of making a ton of news-print paper in the United States varied from \$2.19 to \$7.26 per ton.^{*} The most remarkable fact about it was that the mills paying the lowest wages and having a twelve-hour day, had a higher labor cost per ton of paper than those paying the highest rates of wages and having an eight-hour day.

The solution of this puzzle lies in the chapter of the report dealing with the efficiency of equipment in paper mills. Mills were found to vary greatly in this respect. Some had machinery thirty years old; others boasted of machines with latest improvements. The older machines had a capacity of 17 tons in 24 hours, whereas the newer machines could produce 50 tons. The result, according to the tariff board report (page 52), was that the machine cost of labor per ton of paper was \$1.84 on the old and only 82 cents on the new, the same rate of wages being paid to the machine tenders in each case.

But important as the mechanical equipment is in determining the efficiency of labor, the human equation responds even more readily to variations in wages and hours.

When the agitation for the removal of the import duty on news-print paper resulted in an inquiry by a special committee in Congress, a representative of the largest paper mill company in the country pointed to the fact that they had recently reduced the hours of labor from twelve to eight, without reducing the weekly rate of wages, incurring a corresponding increase in their labor cost. The figures secured by the tariff board from the books of several mills (including those to which reference was made before the committee of Congress) showed a diminution in the labor cost per ton of paper from \$4.35 to \$3.73 in 1909, under the eight-hour system. In other words, an increase in the hourly rate of wages to the extent of 50 per cent not only failed to result in a corresponding increase in the cost of labor per ton of paper, but was accompanied by an actual lowering in cost. Though the figure of \$4.35 in 1908 happened to be the highest in ten years, the tariff board report (page 79) showed that there was not a single year in that decade under the twelve-hour system which showed as low a cost as in 1909, the first year under the eight-hour system. On the other hand, when it is remembered that during a large part of the year of 1906 the mills were idle owing to the strike for shorter hours, and that costs are usually above normal when a plant is started up after a period of idleness, there is every reason to believe that the labor cost was still further reduced after 1909.

Yet it cannot be said that there was a radical change in the equipment of the mills to which these figures relate, immediately following the introduction of the eight-hour shift. The change was due largely to the increase in the personal

^{*} *U. S. Tariff Board Report on Pulp and News-Print Paper Industry*, 1911, p. 39.

efficiency of the workers under the shorter day. The duties of a machine tender in a paper mill consist chiefly in watching the thin liquid sheet of paper as it first appears on the large cylinder of the machine. A slight twist at the outset will result in reams of paper being torn on the cylinder, and a mad rush of all the tenders in an endeavor to set things right; and it will frequently require a complete stoppage of the machine, all of which greatly increases the cost of production. The fatigue caused by twelve hours of such nervous and physical strain, had resulted in a much greater proportion of damaged paper and interruption of work than was the case after the adoption of the eight-hour day.

With the hours of labor cut down from twelve to eight, the machine tender was relieved from duty during the last four hours which were the most trying to the nerves and muscles of a worker, when his alertness and general efficiency were at their lowest ebb. The reduction of hours not only enabled him to leave the mill less fatigued than formerly, but with the resting period increased by four hours a day, the recuperation was more thorough; so that his alertness of mind and body was greater upon his return to work than under the old system it used to be even during the first eight hours. With his mind and body more alert, he was able to detect in time imperfections which formerly escaped his attention.

This resulted in so great an increase in the relative time the machines were in actual operation (free from breakdowns and stoppages), accompanied by a reduction in the quantity of damaged paper on which, in the preceding stages of production, labor had been wasted, that the labor cost of production of paper declined, in spite of the increase in the hourly rate of wages, by as much as 50 per cent.

Even more striking proved many of the facts disclosed by the investigation of the cotton industry. In spite of higher wages prevailing in the United States, as compared with England, and the longer start which the English cotton industry has had over the American, it was found that many varieties of cotton goods, including some of the finest women's dress goods, were sold at lower prices in the United States than in England, and exported to Canada in competition with British goods despite the preferential tariff in favor of England which places imports from the United States at a disadvantage.

That American cotton goods compete with English in China and South America, was known before the tariff board made its investigation. But fear was expressed of the coming menace of Japanese competition with its fifteen-cents-a-day weavers. The tariff board, therefore, extended its investigation to Japan, and figures compared with similar data for corresponding mills in the United States led to the startling revelation that, with the superior American machinery and superior personal efficiency of American labor, the American weaver receiving \$1.60 a day was in certain cases cheaper than the Japanese weaver at 18½ cents a day.⁴

A study by the tariff board of labor efficiency in the various processes of wool manufacture showed that almost invariably the mills paying higher rates of wages per hour, produced goods at a lower cost than their competitors paying lower wages.

⁴U. S. Tariff Board Report on Cotton Industry, p. 12. *Weavers wage bill*, table 162, p. 526.

Thus, in wool scouring the lowest average wage paid to machine operatives in the thirty mills examined, was found to be 12.16 cents per hour, and the highest 17.79.⁵ Yet the low wage mill showed a labor cost of twenty-one cents per hundred pounds of wool, and the high wage mill had a cost of only fifteen cents. One-half of the difference was accounted for by the fact that the low wage mill paid nine cents per hundred pounds for supervisory labor, such as foremen, whereas the high wage mill paid only six cents, showing it had more efficient management.

In the carding department of seventeen worsted mills, the mill paying its machine operatives an average of 13.18 cents per hour had a machine labor cost of four cents per hundred pounds; while the mill paying its machine operatives only 11.86 cents per hour had a cost of twenty-five cents per hundred pounds. This was due largely to the fact that the lower cost, high wage mill had machinery enabling every operator to turn out more than 326 pounds per hour, while the high cost, low wage mill was turning out less than 48 pounds per hour.

The same tendency was observed in the carding departments of twenty-six woolen mills. The mill with the highest machine output per man per hour, namely, 57.7 pounds, had a machinery labor cost of twenty-three cents per hundred pounds, while the mill with a machine output of only six pounds per operative per hour had a cost of \$1.64 per hundred pounds. Yet this mill, with a cost seven times higher than the other, paid its operatives only 9.86 cents per hour, against 13.09 cents paid by its more successful competitor.

These examples could be repeated for other departments of woolen and worsted mills, but will suffice to illustrate the point that higher wages do not necessarily mean higher costs. They show that mill efficiency depends more on a liberal use of the most improved machinery than on low wages. Thoughtful planning in arranging the machinery to save unnecessary steps to the employes, careful buying of raw materials, the skillful organization and utilization of the labor force in the mill, systematic watching of a thousand details, each affecting the cost of manufacture, will reduce running expenses to an astonishing degree.

It may be said that there need not be any relation between the pay of the help and the efficiency of the management at the head of the mill. There seems to be no necessary connection between the two, yet economic literature is full of references to the fact that successful strikes resulting in an appreciable rise of wages or reduction of hours have been followed by the introduction of new machinery or other labor saving devices to offset the heightened cost. All things remaining equal, an increase of wages must necessarily lead to an increase in the cost of production. The threatening diminution of profits, acts as a powerful stimulus to the owner or manager of a plant who is anxious to make possible savings, where he was satisfied before to plod along in the established rut.

The illustrations cited above, although taken from industrial records, are the results of statistical investigations. They would, perhaps, sound more convincing to the average business man if

⁵ *Tariff Board Report on Wool and Manufacturers of Wool*, p. 1022.

supplemented by facts gathered from actual experience of practical manufacturers. Such experience is most entertainingly described by Secretary of Commerce Redfield in his brilliant little book *The New Industrial Day*, published shortly before the war. Almost all the facts he recites are the result of his personal experience of 25 years as a manufacturer and seller of American products in foreign markets.

How does it happen [says Mr. Redfield] that in a quotation recently made for machinery to a mine in Japan the American price was \$215 less than the English price? How does it happen that American locomotives are running upon the Japanese railways, upon those of Formosa, upon those of Manchuria and Brazil? These are sold in competition with makers in Great Britain. I know what those locomotives cost, relative to those made by German and English manufacturers; and I happen to know this, which is one of several stories which will illustrate this particular contention—namely, that last year I was in the city of Tokyo, and a friend who was with me took a large contract from the Japanese Imperial State Railways, in open competition with Germany and England, for several million dollars' worth of locomotives. That gentleman went to the locomotive shops of the Imperial Railways, and the Japanese master mechanic said to him: "We can make locomotives much cheaper than you can in America."

"Can you?" inquired my friend. "If so, let us get at the facts. If you will tell me from your cost sheets what your locomotives cost, I will tell you what ours cost." And, by the way, he said: "What makes you think your locomotive cost less than ours?"

"Why," the Japanese replied, "because we pay only one-fifth the wages to our men that you pay to yours."

So they got the cost books, and discovered that the labor cost for locomotives on the same specifications was three and one-half times greater in the Japanese shop than in the American shops. That is a perfectly normal fact and not an abnormal one.⁶

It's a far cry from a locomotive to a screw, but not so far when the question of labor costs is concerned. For the same law governs the relation of wages to costs in all industries.

Once says [Mr. Redfield] "an Englishman asked me to go into his works and suggest how to cut down his labor cost. What I found at that particular time in that English factory was this; a screw machine was making bolts of various sizes, and a boy was running it at a very small wage, probably about two shillings a day.

I stood looking at the boy and his product; first, twenty half-inch bolts, and then twenty-five one-eighth-inch bolts, and then fifty three-quarter-inch bolts, and then five or six one-inch bolts, and then back to quarter inch. I went to the

⁶Redfield—*The New Industrial Day*, p. 84 and 85.

superintendent and said to him, "That boy is costing you more than a man who earns \$3 a day would in one of our shops. His time is used in altering tools. He is "breaking up," as we say, altering his machine from time to time and stopping his processes ten to fifteen times a day.

He said, "What would you do?"

I said, "Give him one size and let him run all day on that. The next morning give him another size and let him run all day on that, and the next morning give him another size; do not stop your machines, but run them steadily on one size."

"Why," he said, "we cannot get foremen to think that out."⁷

Perhaps the most striking illustration of the effect of low wages on the *personal efficiency* of a worker is contained in the following story recounted by Mr. Redfield:

Once, when my office was located in Paris, I employed a lot of French carpenters and paid them ten francs a day—\$1.90 each—and at the end of three or four days I was well-nigh crazy. Down the long aisle of the building I saw a familiar-looking tool box, with a saw sticking from the end, and I ran to the place and found a man who looked like an American carpenter.

"Are you a Yankee?" I said, "I want to employ you at once."

He said, "Boss, I charge \$4.50 a day."

I said, "Come right along."

Two days later I discharged four Frenchmen, for my one American carpenter did more work than the four Frenchmen—and I saved money by the process.

There are sound reasons why the American carpenter did as much work as four Frenchmen.

A French workman goes to work having eaten almost nothing. For breakfast he has nothing more than a bit of bread, without butter, and coffee. At eleven o'clock he stops to eat a little bread and drink a little sour wine. At three o'clock he stops again to eat a little bread and drink a little sour wine. After he gets through at night he has what he calls a dinner. Such a man cannot work at any labor requiring steady physical exertion continuously under pressure, in competition with a man who eats three square meals a day.⁸

Books could be filled with facts from industrial experience to demonstrate the absolute fallacy which clings so stubbornly to the mind of the average employer that low wages are synonymous with low costs. It is hoped, however, that the few illustrations taken from so wide a range of industries are sufficient to establish the fact that a wage rate is meaningless in determining costs, unless taken in conjunction with output. But if a general rule

⁷ *Ibid.*, p. 92 and 93.

⁸ *Ibid.*, p. 91 and 92.

is to be formulated as to the relation of wages to costs, it would be much safer to say that high wages spell low costs, than the contrary.

How generally true this is, supported as it is by the experience of the greatest variety of industries, industries run on a large scale and small, under Scientific Management and indifferent management; employing men and employing women; paying by the piece and paying by the week, is shown by the following list of American products offered for sale in foreign markets in competition with the cheaper labor of Germany or England, which Secretary Redfield cites at random from the columns of an American export journal:

Ironmongery, fine tools, bicycles, sporting goods, lamps, razors, firearms, carriage makers' supplies, sanitary goods, lighting systems, dry goods, men's furnishing goods, boots and shoes, corsets, hats and caps, textiles, clothing, women's furnishings, office furniture, office devices, stationery, typewriters, filing cabinets, printers' supplies, paper, machine tools, boilers, lubricants, electrical material, valves, wood-working machinery, belting, shafting, pulleys, packing, furniture, kitchenware and agricultural implements.⁹

RELATION OF COMPENSATION TO OUTPUT

Week Work

That high wages are economical when accompanied by a corresponding output, is easily understood. "But," says the average employer, "the two do not necessarily go together. The tendency of the average worker, especially, the union worker, is to lie down on his job. When paid by the week, he tries to keep down his output partly from inertia and a natural tendency to 'take things easy,' and partly from a feeling that the less he will produce, the more work there will be to go around among his fellow-workers. And this, in turn, he feels, will keep down competition for jobs among workmen and help keep up wages."

Unfortunately, this charge is justified to a large extent. It is the way human nature works under certain conditions. Knowing that he will be unceremoniously thrown out on the street when not needed, and having no desire to subject his family to the hazards of hardships or starvation, which is the lot of the unemployed man, the workman has no more regard for the inter-

⁹ *Ibid.*, p. 88.

ests of the employer than the latter reveals for him. Not until industry or society provides adequate safeguards for the interests of the worker who suddenly finds himself displaced through no fault of his own, can he be expected to change his attitude.

Manufacturers, industrial engineers, foremen and all those who employ labor in industry, prefer, therefore, to base compensation on output, except in industries where the work of the employe is so controlled through the operation of his machine or the organization of the factory or mill that he cannot easily reduce output.

Piece Work

Advantages of Piece Work.—The simplest way of basing compensation on output is through piece work. The compensation of the worker is strictly proportional to his exertions. The more he produces, the greater the contents of his pay envelope. With the piece rate once determined, the system seems to work fairly to both sides. The interests of both employer and employe seem to be identical, since the more the worker earns, the greater the production and, therefore, the lower the overhead expense of the plant per unit of product.

Disadvantages of Piece Work.—Unfortunately, the same cannot be said of the rate itself. There is an obvious conflict of interests in determining the rate, the old game of the seller (the worker) trying to get the highest possible price and the buyer (the employer) seeking to buy cheap, reasserting itself in this case. If this were the only drawback of the piece rate system, it would be eliminated, at least, upon the determination of the rate. Unfortunately, industrial practice has intensified the evil a thousand fold and has caused piece workers to restrict output with no less determination than that shown by time workers. This practice consists of cutting down piece rates when the workers earn "too much" money.

1. *Rate Cutting.*—The late Frederick Taylor addressing the Efficiency Society of New York shortly before his death gave a striking recital of the reaction of the worker under this practice. He told of his early experience as a mechanic at the Midvale Steel Company plant and how, when he attempted to do an honest day's work he was warned by his fellow-workers to "go slow." The admonition was so emphatic that he soon found it best for

his health to fall in line with the rest of the crowd. A few years later he was promoted to a foremanship.

On assuming his new duties he called together all his fellow-workers and pointed out to them that having come up from the ranks he knew all the tricks of the "laying down" game and that, therefore, he expected them to turn a new leaf and do the best they could. In turn he assured them that they need have no fear of their piece rates being cut no matter how much their earnings might go up as a result of their increased efforts. The workers took him at his word and went to work with a will. Soon the new foreman was the talk of the plant, for he was breaking all records of production. It was not very long before one of the directors of the company visited the plant and heard of the remarkable performance of the new foreman. Being of a curious mind, he looked up the shop personally and inquired for the pay roll.

Like the good business man that he was, he was shocked by the inordinately high wages of the employes in Taylor's shop exceeding by several dollars the prevailing rate in the industry. He ordered the rates cut in spite of all the pleadings of the superintendent and the foreman who pointed out the destruction of morale among the working force which this act would cause. Needless to say that the effect was to destroy all the confidence in the integrity of the employer which Mr. Taylor had built up among his men. His despair knew no bounds. Most men in his place would have given up the struggle, but Taylor was no ordinary man. The shock he experienced caused him to do some hard thinking and from this experience was born his *Principles of Scientific Management*.

Mr. Taylor's experience was not exceptional. Anyone with the least industrial experience can cite similar instances from plants under his own observation. This virtually uniform practice has embittered the workman and has undermined his confidence in the employer to an extent that no amount of assurance of a change of policy seems able to restore.

Much of the rate cutting is due to cupidity or short sightedness on the part of employers who do not realize that for every dollar in wages which they thus save they lose infinitely more in lost efficiency caused by the curtailment of output by workers to which they are forced to resort in self-defense.

But even with the best of intentions on the part of employing management piece-rate cutting is frequently unavoidable. In a plant having much sub-division of labor, it is impossible to allow a rate to remain uncut where it yields a particular section of workers earnings so high as to be out of all proportion to those of workers in other sections. If the prevailing earnings of skilled workers of that craft are, say, \$5 per day, and a miscalculated piece rate yields workers on a particular operation \$10 per day, all the other employes will demand an increase in rates to bring their earnings up to the level of the lucky section. It is a psychological law. There are no absolute standards of earnings which will keep a worker satisfied. His satisfaction is largely based upon a sense of relative justice measured by comparison with prevailing earnings among groups of workers of similar skill.

2. *Loss of Earnings Through Inefficiency of Management.*—Another strong objection to piece work raised by workmen is based on the loss of earnings which they incur through inefficiency of management or other losses beyond their control. Only highly efficient plants—and their number is as yet small—know how to maintain an even flow of work throughout the plant. The balance of work between the different departments of the plant is rarely maintained on an even keel for any length of time. As a result, workers in one department may be idle for hours, or considerable parts of the day, and sometimes even for days, while other departments have more work than they can handle. Poor control of the stock room results in the lack of one or more items of material being discovered at the last moment, when it is too late to prevent interruption of work. All these breaks in production fall with their full weight upon the worker, depriving him of earnings through no fault of his own, while his time is at the call and disposal of his employer.

3. *Speeding.*—A third objection to piece work raised by workmen, particularly by organized labor, is the excessive speeding which the system encourages to the great detriment of the workers' health, frequently causing physical breakdown in the prime of life.

4. *Jealousy and Favoritism.*—The desire to earn as much as possible causes a good deal of racing among the workmen provoking jealousies among them which foremen know how to utilize

to prevent solidarity among the workers, by making favorites of some and discriminating against others. Union men are often given less desirable work than those who do not belong to the union; frequently they are made to wait longer for their work in the intervals between one job and another.

5. *Sacrifice of Quality*.—An objection to piece work which comes from employers is the tendency on the part of workers to sacrifice quality for quantity. Insistence on the part of the management on standards of quality leads to friction with the help.

Such are the objections to piece work which have caused the industrial engineer to seek other means of compensation for labor. With all its drawbacks, however, the piece-rate system has the great advantage over the straight time-work in that it gives the workman a direct interest in his output, since his compensation rises automatically in a direct ratio to his effort and skill. From the point of view of the employer the piece-work system offers the great advantage of making wages strictly dependent upon output and automatically stopping wage leaks which are so common under the straight time-work system. Any substitute for piece work must, therefore, retain its advantages while eliminating its disadvantages. This ideal is believed by leading industrial engineers to be attained in

The Time and Bonus System

The essential feature of this system of compensation for labor is the return to the original plan of paying the workman a wage on a time basis. This is based on the recognition of the fact that the workman is entitled to a certain minimum compensation for his time and labor power which he places at the disposal of his employer. At the same time his interest in his output is stimulated by an additional compensation, known as bonus or premium, which is based upon output.

There are several systems of bonus compensation. The best known plans are all based on careful time studies as a preliminary to fixing any rate of compensation. All of these systems have in common: 1) a straight hourly rate for each operation based upon the skill it requires; 2) a definite time allowance for every operation; 3) an additional compensation, known as "bonus" for doing the work in less time than the allowance calls for.

Advantages of the Time and Bonus System.—There are definite advantages and distinct merits attached to the time and bonus system of compensation. 1) First and foremost from the point of view of justice to the worker is the definite minimum hourly compensation independent of his output. The worker is entitled to a living wage, if he is at all fit to be employed. Straight piece work does not assure him such a minimum wage. Straight time work gives him a definite wage, but deprives him of any additional compensation in proportion to increased effort, skill or speed. It thereby destroys the incentive to conscientious endeavor, thus hurting the interests of the employer and employe alike. 2) This incentive is present under the bonus system, although the bonus earned is usually not proportionate to the increased output, as is the case under piece work, as will be shown below. 3) As already stated, the definite time allowance for each job is based upon careful time study. While there has been a good deal of well merited criticism of the methods employed in time studies,¹⁰ the conscious aim of leading industrial engineers like Taylor, Emerson, Gantt, Barth, *et al*, has been to determine, by careful and conscientious study of the motions of several workers on a given operation, "the time it ought to take to do the work without undue effort when every unnecessary waste is eliminated."¹¹

In this respect the time and bonus plan is superior to the old time piece rate system. The predetermined time allowance based upon the elimination of "every unnecessary waste" reduces to a minimum the chance of fixing the rates out of all proportion with existing standards of wages, with the unpleasant necessity of cutting the rates, a practice so disastrous to the worker and employer alike.

On the other hand, the time study aims to determine a fair time allowance for every job "without undue effort." Speeding is frowned upon by the enlightened engineer who recognizes that anything that injures the health of the worker cannot be of permanent benefit to the industry. Scientific time studies have established the fact that every person and every job have their own time-rhythm which determines the normal rate at

¹⁰ See Robert F. Hoxie, *Scientific Management & Labor*, Appleton Co., 1915.

¹¹ Harrington Emerson, *A Comparative Study of Wage and Bonus Plans*. New York, 1917.

which the work can best be done. To illustrate: the normal gait for walking for the average person is, let us say, three miles per hour; for a child it may be only one mile an hour. A normal man walking at the rate of a child would feel more tired at the end of an hour after walking one mile, than he would, if he walked three miles at his normal pace. On the other hand, he would not only be tired but exhausted, if, through speeding, he managed to walk five or six miles in one hour. Scientific time study aims at establishing the normal rate of speed, avoiding "undue effort" on the one hand, and "every unnecessary waste" of time or effort on the other.

Having established the standard time for an operation through time study, there is no reason why a proper piece rate cannot be established just as accurately as a bonus rate, which would prevent the necessity of cutting the rate later. At the plant of Joseph & Feiss of Cleveland, where Scientific Management is in practice, practically all work is done at piece rates based on time studies and the system has been in successful operation for nearly a decade. The claim of this piece rate system to superiority is based on the fact that the rates being determined through time studies, there is no occasion for cutting them. But even this safeguard does not relieve it of the charge that, in common with all piece rate systems, it encourages speeding. This is overcome in part by deductions from pay for each defect discovered in the work of an employe and an equal reward for every defect discovered by the employe in another person's work. Not all bonus plans operate in the same manner in their effect on speeding. Some offer an incentive to speeding far worse than straight piece work, while others are calculated to discourage it. We will consider here the five best known bonus systems.

The Halsey Premium Plan was the first bonus system adopted. Under this plan the worker receives one-third, or one-half of the time saved. Thus, if the time set for a job is four hours and the rate is 50¢ per hour, and if the job takes actually only two hours, the worker would receive, under the one-half premium plan, 2×50 , or \$1.00 for the time he worked plus $\frac{1}{2}$ of \$1.00, or 50¢ for the time saved, making the total wage \$1.50 for two hours, or 75¢ per hour. Under the one-third plan he would receive \$1.00 plus 33¢, or \$1.33, or 67¢ per hour.

The Halsey Plan was adopted before scientific time studies

were in use in industry. The premium it offers the worker is based upon standard time as determined by previous records in the shop. There is nothing inherent in the Halsey plan, however, to prevent its adoption in combination with scientific time studies. Under this plan both employer and worker are benefited as the efficiency of the worker is increased, as shown by the figures in Table 1.

TABLE 1
ILLUSTRATION OF HALSEY'S PREMIUM PLAN

Hours			Compensation				Labor Cost		
Standard	Actual	Saved	Time Wage	Bonus	Total	Total Earnings per Hour	No. of Units Made	Total Labor Cost	Labor Cost per Unit
Rate per hr. 50¢—Premium: One-half of Time-Wage Saved									
4	4	0	2.00	0	2.00	.50	4	2.00	.50
4	3	1	1.50	.25	1.75	.58 $\frac{1}{3}$	4	1.75	.43 $\frac{1}{4}$
4	2	2	1.00	.50	1.50	.75	4	1.50	.37 $\frac{1}{2}$
4	1	3	.50	.75	1.25	1.25	4	1.25	.31 $\frac{1}{2}$
Rate per hr. 50¢—Premium: One-third of Time-Wage Saved									
4	4	0	2.00	0	2.00	.50	4	2.00	.50
4	3	1	1.50	.16 $\frac{2}{3}$	1.67	.56	4	1.67	.41 $\frac{3}{4}$
4	2	2	1.00	.33 $\frac{1}{3}$	1.33	.67	4	1.33	.33 $\frac{1}{4}$
4	1	3	.50	.50	1.00	1.00	4	1.00	.25

As will be seen from the figures in Table 1, as the worker gains in efficiency his earnings under the one-half bonus plan may rise, in the illustration chosen, from 50¢ per hour to \$1.25 per hour, while at the same time the labor cost to the employer goes down from 50¢ per unit of product to 31 $\frac{1}{2}$ ¢. Under the one-third bonus plan, the earnings of the worker will go up from 50¢ to \$1.00 per hour, while the labor cost per unit of product will at the same time go down from 50¢ to 25¢. In other words, under the one-half plan the earnings of the worker per hour would go up 2 $\frac{1}{2}$ times, while the labor cost to the employer would go down but

a little over one-third; while under the one-third plan the earnings of the worker would double and the labor cost to the employer would be reduced one-half.

The Rowan Premium Plan provides for the payment of a regular hourly rate and, in addition, of a bonus equal to the percentage of time saved, multiplied by the wage for the time actually taken to do the work. Under this plan the amount of which the bonus forms a percentage is based not on the time saved, but on the time taken, so that the less time the worker takes to do his job, the less is the bonus in proportion to his efforts. Thus, if the set time is four hours and the rate is 50¢ per hour, and the job is done in three hours, the worker has saved one hour, or 25%. His regular wage would therefore be equal to \$1.50 and his bonus to 25% of that amount, or 37½¢.

On the other hand, if the workman did the job in one hour, saving his employer 75% of the time set, his bonus, as will be seen from Table 2, illustrating the working of the plan, would be no greater, that is to say, the same 37½¢. This plan is manifestly unfair to the workman, yet even under this system of bonus payments it will be seen from the table below that it gives the workman a substantial increase of earnings per hour as the labor cost per unit of product is reduced. The employer, however, is benefited to a much larger extent than the employee.

TABLE 2
ILLUSTRATION OF ROWAN'S PREMIUM PLAN

Rate per hr. 50¢. Bonus: Percentage of time saved multiplied by wage for time in which the work was done.

Hours				Compensation				Labor Cost		
Standard	Actual	Saved	% Hours Saved	Time Wage	Bonus Wage	Total	Total Earnings per Hour	No. of Units Made	Total Labor Cost	Labor Cost per Unit
4	4	0	0%	2.00	0	2.00	.50	4	2.00	.50
4	3	1	25%	1.50	.37½	1.87½	.62½	4	1.87½	.47
4	2	2	50%	1.00	.50	1.50	.75	4	1.50	.37½
4	1	3	75%	.50	.37½	.87½	.87½	4	.87½	.22

The Gantt Task and Bonus System.—This is a modification of the Taylor differential piece-rate system. Under the Taylor plan, the task or number of units which a workman can produce in a given time is determined by careful time study. Two piece-rates are then set for the work: a low rate, if the worker fails to make his task in the prescribed time and a higher rate, if he makes his task in the standard time, or less. Under this system of payment, the worker is stimulated to exert himself to the utmost to earn the higher rate. The incentive to speeding is obvious.

The Gantt plan converts the Taylor differential piece-rate system into a task and bonus system, that is to say, instead of having two piece-rates, there is a basic rate per hour which is all that the worker receives so long as he fails to meet the task; as soon, however, as the worker has made his task in standard time or less, he receives a bonus varying from 20 to 50 per cent, according to the nature of the work and the degree of inducement which is regarded necessary to insure the interest of the worker. Once the worker has achieved his task in a given time, the combined time and bonus rate remains fixed, so that from that point on the compensation becomes virtually a straight piece-rate, the same as under the Taylor system.

In the illustration given in Table 3 it is assumed that the basic rate for the worker is 50¢ per hour, and that the bonus is 50% of the wages earned in standard time. Under this system of payment, if the standard time is four hours, and it takes the worker anything from 5 to 8 hours, he will receive a straight hourly rate of 50¢ per hour. The moment, however, he makes his task, that is to say, as soon as he does the required number of units in 4 hours, he receives in addition to \$2.00 for 4 hours' work, a bonus of 50% of that amount, or \$1.00, making the total payment equal \$3.00. His earnings thus suddenly increase from 50¢ to 75¢ per hour. The achievement of the task thus brings a high reward, but (as in the case of the Taylor system) if the workman has strained himself to the utmost and reduced the time, in which he makes the task, from 8 hours to, say, $4\frac{1}{2}$ only, he would get no reward whatever, still drawing his 50¢ per hour. In fact, he would be penalized for his extra effort, for instead of receiving \$4.00 for the job as he did when it took him 8 hours to do it, he would now get only \$2.12 for the same amount of work, done with

TABLE 3
ILLUSTRATION OF GANTT'S BONUS PLAN

Hours			Compensation				Labor Cost		
Standard	Actual	Saved (+) or Lost (-)	Time Wage	Bonus	Total	Total Earn- ings per Hour	No. of Units Made	Total Labor Cost	Labor Cost per Unit
4	8	-4	4.00	0	4.00	.50	4	4.00	1.00
4	7	-3	3.50	0	3.50	.50	4	3.50	.87½
4	6	-2	3.00	0	3.00	.50	4	3.00	.75
4	5	-1	2.50	0	2.50	.50	4	2.50	.62½
4	4	0	2.00	.40	2.40	.60	4	2.40	.60
4	3	+1	1.50	.90	2.40	.80	4	2.40	.60
4	2	+2	1.00	1.40	2.40	1.20	4	2.40	.60
4	1	+3	.50	1.90	2.40	2.40	4	2.40	.60

A-Rate: 50¢ per hr.—Bonus: (Minimum) 20% of Wage for Standard Time

B-Rate: 50¢ per hr.—Bonus: (Maximum) 50% of Wage for Standard Time

4	8	-4	4.00	0	4.00	.50	4	4.00	1.00
4	7	-3	3.50	0	3.50	.50	4	3.50	.87½
4	6	-2	3.00	0	3.00	.50	4	3.00	.75
4	5	-1	2.50	0	2.50	.50	4	2.50	.62½
4	4	0	2.00	1.00	3.00	.75	4	3.00	.75
4	3	+1	1.50	1.50	3.00	1.00	4	3.00	.75
4	2	+2	1.00	2.00	3.00	1.50	4	3.00	.75
4	1	+3	.50	2.50	3.00	3.00	4	3.00	.75

greater exertion. Viewed from this angle, Mr. Gantt's claim that "We have here all the advantages of day work combined with those of piece work, without the disadvantage of either,"¹² is hardly sustained. In the eyes of the worker who had to double his effort to bring his time down from 8 to 4½ hours, there is no advantage in this system over the straight time system and in so far as the Gantt system has made him hustle and left him with \$2.12 for his effort, instead of \$4.00 which he would have received

¹² H. L. Gantt, *Work, Wages and Profits* (The Engineering Magazine Co., 1919), p. 165.

had he continued to work at his accustomed easy pace, it looks like a deliberate scheme to hold out a bait which is just beyond his reach, and which benefits the employer exclusively.

From the point of view of labor costs, the Gantt system of payment will prove of great advantage to the employer, for the cost per unit of product (see Table 3) will be reduced from \$1.00, if the worker did his task in 8 hours, to 62½¢ if it took him only 5 hours.

As soon as the worker has made his task, his payment becomes fixed. In our illustration it equals to \$3.00 for 4 hours. If he should go beyond the standard and gradually reduce his time for the task to three, two or one hour, he would continue to receive \$3.00 for the task. In other words,—from the moment he meets the task the payment becomes a straight piece-rate and his earnings per hour mount as he gains in speed, as they do under any piece-rate system.

Turning to the illustration in Table 3: The cost per unit of product when the task is achieved is 75¢. As the workman gains in speed beyond that point his earnings rise rapidly from 75¢ per hour to \$3.00 per hour. It must be borne in mind, however, that "the task is based on a detailed investigation by a trained expert of the best methods of doing the work"¹³ and that in order to earn bonus the work must not only be done in standard time or better, but must be "up to the standard for quality."¹³ Under these conditions, it is very seldom that the worker can beat standard time very materially and, therefore, the earnings above \$1.00 per hour as worked out in Table 3, are more in the nature of a mathematical illustration of what the earnings may theoretically rise to, rather than examples of practical reality. There is, therefore, not likely to be much incentive to further speeding after the worker has made his task.

[As viewed by Mr. Gantt himself, his] system of pay is really a combination of the best features of both day and piece work. The workman is assured his day rate while being taught to perform his task, and as the bonus for its accomplishment is a percentage of the time allowed, the compensation when the task has been performed is a fixed quantity, and is thus really the equivalent of a piece-rate. Our method of payment then is piece work for the skilled, and day work for the unskilled, it being remembered that if there is only work enough for a few, it will always be given to the skilled. This acts as a powerful stimulus

¹³ *Ibid.*, l. c., p. 149.

to the unskilled, and all who have any ambition try to get into the bonus class. . . . The day worker who has no ambition to become a bonus worker usually of his own accord seeks work elsewhere, and our working force soon becomes composed of bonus workers, and day workers who are trying to become bonus workers.¹⁴

Of course it would be impossible to discriminate in such a way between one set of workers and another in a union shop, the union usually insisting that when there is not enough work to keep everybody busy, work must be divided among all as equally as possible. Still, the system would tend ultimately for the best workers to remain at the plant.

The Emerson Bonus Plan, in the words of the author of the plan, being a later evolution than the plans of Halsey, Rowan, Taylor and Gantt, had the benefit of their experience, owes much to them, but also aimed to avoid any weaknesses in the earlier plans and to add valuable features not hitherto included.¹⁵

Its main features are summed up by its author under the following 3 heads:

1. Efficiency is determined not for each operation or job, but for a period of time, such as a day, week or month.

2. Efficiency is expressed in the form of a percentage obtained by dividing the aggregate standard time by the aggregate actual time. Thus, if the total number of hours worked in a week is 250 and the worker has delivered 260 hours of standard work, his efficiency is 260 divided by 250, or 104%.

3. The transition from inefficient time pay to standard time and bonus is made not abruptly, as under the Gantt plan, but gradually. Bonus begins when the worker reaches 67% efficiency instead of 100%, as under the Gantt plan. The bonus at 67% is insignificant, being only one hundredth of one per cent of the hourly wages earned. It gradually increases by fractions of one per cent until it equals to 1% at 74% efficiency, 2% at 77% efficiency, 3.3% at 80% efficiency, 10% at 90% efficiency. From that point on, the bonus increases at the rate of 1% for each additional per cent efficiency, so that it equals 20% at 100% efficiency, 25% at 105% efficiency, etc.

In other words, the worker is paid for full standard time, if he does the work in less than standard time, in addition to

¹⁴ *Ibid.*, l. c., p. 165.

¹⁵ Harrington Emerson, *A Comparative Study of Wage and Bonus Plans*, p. 18.

a bonus of twenty per cent. Thus, if standard time for performing a certain operation is 4 hours (See Table 4), and the hourly rate is 50¢, and the worker has accomplished his task in three hours, showing an efficiency of 133%, his compensation will be as follows:

3 hours actual time—3 x 50..	\$1.50		3 hours actual time—3 x 50..	\$1.50
1 hour saved from standard			Bonus 53%, on 3 hours	
time 1 x 50.....	50		worked or 53% of \$1.50..	.80
Bonus 20%, on 3 hours		or:		
worked—20% of \$1.50...	.30		Total.....	\$2.30
Total.....	\$2.30			

making the total earnings per hour equal \$2.30 divided by 3, or 77¢. This plan has the obvious advantage over the Gantt plan that by avoiding the sudden jump from no bonus when work is less than 100% efficient to a bonus of from 20 to 50 per cent, when 100% efficiency is attained, it does away with the gambling with the worker's energy and ambition and offers him a gradually increasing reward as his efficiency advances from 67% upward. At every stage of improvement beyond 67% efficiency the worker is encouraged and has the satisfaction of increasing his hourly earnings.

As already stated, the Emerson plan provides for increasing efficiency not only on separate jobs, but per day, week or month, while the Gantt and other plans have the job as a basis. This has a tendency to reduce the worker's earnings under the Emerson plan, since it is impossible to maintain as high a rate of efficiency continuously as it is on separate jobs; the figure representing aggregate efficiency is thus reduced, reducing the average hourly earnings. On the other hand, when the worker discovers this, he will realize that overspeeding on individual jobs, causing exhaustion and lowered efficiency on subsequent jobs, brings a lower aggregate income than a more moderate efficiency steadily maintained. This should furnish the best corrective against undue speeding.

From the point of view of labor cost, the Emerson plan is like the Halsey and Rowan in that it provides for a constantly reduced cost per unit of product as the efficiency of the worker and his earnings per hour increase while, under the Gantt plan the cost

remains the same after the worker reaches and passes 100% efficiency.

[As Mr. Emerson says] "An employer can well afford to pay a large bonus; he can well give the total wages saved as bonus and derive his own benefit from the increased output of the plant and the greatly reduced overhead. It is for this reason that for efficiencies above 100% the worker is given as a bonus his hourly rate for all the time he saves in addition to 20% on the wages for the time he works.¹⁸

In spite of that, the labor cost per unit of product continues to drop under the Emerson plan after the worker has exceeded 100% efficiency. Thus in the illustration in Table 4 at 50% efficiency the labor cost to the employer per unit of product is \$1.00; at 66 $\frac{2}{3}$ % efficiency the cost drops to 75¢; at 100% efficiency the cost is reduced to 60¢; at 200% efficiency it goes down to 55¢, and so on. At the same time the worker's hourly earnings advance from 50¢ to 52¢, 60¢ and \$1.10.

TABLE 4
ILLUSTRATION OF EMERSON'S BONUS PLAN

Rate: 50¢ per hr. Bonus: Commencing with one-hundredth of 1% for 67% efficiency, it rises to 3.3% for 80% efficiency; to 10% for 90% efficiency; and thereafter increases at the rate of 1% for each 1% increase of efficiency, so that it is 20% at 100% efficiency; 25% at 105% efficiency, etc.

Hours			Compensation				Labor Cost			
Standard	Actual	Percentage of Efficiency	Time Wage	Bonus		Total Wages	Total Earnings per Hour	Total Labor Cost	No. of Units Produced	Cost per Unit
				% of Time Wage	Amount					
4	8	50%	4.00	0	0	4.00	.50	4.00	4	1.00
4	7	57%	3.50	0	0	3.50	.50	3.50	4	.87
4	6	66 $\frac{2}{3}$ %	3.00	0	0	3.00	.50	3.00	4	.75
4	5	80%	2.50	3.3%	0.08	2.58	.52	2.58	4	.65
4	4	100%	2.00	20%	0.40	2.40	.60	2.40	4	.60
4	3	133%	1.50	53%	0.80	2.30	.77	2.30	4	.58
4	2	200%	1.00	120%	1.20	2.20	1.10	2.20	4	.55
4	1	400%	.50	320%	1.60	2.10	2.10	2.10	4	.52

¹⁸ *Ibid*, l. c., p. 19.

CONCLUSION

Each of the systems of compensation mentioned has its advantages and disadvantages and the adoption of one or the other will depend upon the aim in view.

Whatever the system adopted, assuming that the object is to adopt a system of compensation that will secure efficiency without overspeeding; that will tend to keep down costs, while raising wages; and that will appeal to the sense of fairness of the worker, certain general principles suggest themselves for our guidance:

1. The workman is entitled to a living wage as a minimum compensation for his time and effort which he spends at the plant. Whatever the form of compensation, he must receive a basic wage measured by the time he spends at the plant, at a rate sufficient to yield a living wage.

2. If workers are not to be prejudiced against any system of compensation based on output (whether piece-rate or bonus) they must be paid the basic hourly rate for all idle time spent at the plant through no fault of their own.

3. If workers are paid by the piece, the rates must be so adjusted as to yield the worker a distinctly higher wage (from 20% to 50%) than the minimum wage paid the worker of ordinary speed and skill.

4. Where time and bonus rates are paid, they should be so arranged as not to rob the worker of the fruits of his extra exertion on the one hand, and to discourage excessive speeding on the part of the worker beyond what has been demonstrated as safe by careful time studies; excessive speed being harmful to the health of the worker and to the quality of the product.

5. Brief rest periods in addition to the noon recess, or frequent changes of position in receiving and turning in work, should be provided to avoid undue fatigue and monotony. This will safeguard the health of the workers and in the end result in increased output.

6. Under no circumstances should piece or bonus rates be cut on the ground that the earnings of the workers are too high so long as there is no change in the operation or in the manufacturing process.

7. If the opposition of workers to new machinery, or improved labor-saving methods, due to fear of losing the job, is to be over-

come, employes made superfluous must never be discharged. Ordinarily, the growth of the business, the natural labor turnover, and the possibility of transfers to other departments, will take care of the superfluous workers. If these should fail to materialize as rapidly as may seem desirable, it will be cheaper in the long run to employ the workers on their jobs on part time, paying full time wages, than to show indifference to the employe's fate by "firing" him unceremoniously.

8. The worker should share in the benefits resulting from the introduction of improved machinery and increased efficiency. Whether this share should take the form of higher wages, shorter hours, or a share in the general profits, or in the specific savings resulting from the improvements, is a subject so large as to require separate treatment.